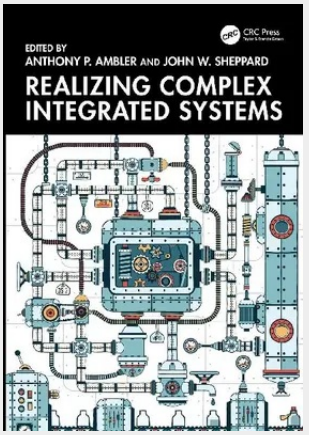
Ambler / Sheppard

Realizing Complex Integrated Systems

The creation of complex integrated systems is, in itself, complex. It requires immense planning and a large team of people with diverse backgrounds based in dispersed geographical locations (and countries) supposedly working to a coordinated schedule and cost. The systems engineering task is not new, but recent scales most definitely are. The world is now capable of designing and manufacturing systems whose complexity was not considered possible 10 years ago. While many are trained to think in terms of a complete system, where ‘everything’ is designed and produced by a single project team, today such systems involve integrating subsystems and components (which are also complex) that have been developed by other project teams. Inevitably, this introduces additional complexities, involving elements out of the direct control of the project, but which are essential to its overall success. In addition to traditional systems engineering topics of hardware and software design, testability, and manufacturability, there are wider issues to be contemplated: project planning; communication language (an issue for international teams); units of measure (imperial vs. metric) used across members of the team; supply chains (pandemics, military action, and natural disasters); legal issues based on place of production and sale; the ethics associated with target use; and the threat of cyberattack. This book is the first attempt to bring many of these issues together to highlight the complexities that need to be considered in modern system design. It is neither exhaustive nor comprehensive, but it gives pointers to the topics for the reader to follow up on in more detail.

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